Labavitch, J. M., 32:385–406 Lang, A., 31:1–28 Laties, G. G., 33:519–55 Leaver, C. J., 33:373–402 Lee, M., 39:413–37 Leong, S. A., 37:187–208 Letham, D. S., 34:163–97 Lin, W., 37:309–34 Lloyd, C. W., 38:119–39 Loewus, F. A., 34:137–61 Loewus, M. W., 34:137–61 Lorimer, G. H., 32:349–83 Losada, M., 32:169–204 Lucas, W. J., 34:71–104

#### M

Møller, I. M., 37:309-34 Maliga, P., 35:519-42 Malkin, R., 33:455-79 Mandava, N. B., 39:23-52 Marx, G. A., 34:389-417 Meins, F. Jr., 34:327-46 Melis, A., 38:11-45 Messing, J., 37:439-66 Miernyk, J. A., 33:27-50 Mimura, T., 38:95-117 Minchin, P. E. H., 31:191-215 Moore, T. S. Jr., 33:235-59 Moreland, D. E., 31:597-638 Morgan, J. M., 35:299-319 Morris, R. O., 37:509-38 Mullet, J. E., 39:475-502 Munns, R., 31:149-90

### N

Nakamoto, H., 36:255–86 Neilands, J. B., 37:187–208 Nester, E. W., 35:387–413 Newton, K. J., 39:503–32

#### 0

O'Leary, M. H., 33:297–315 Oaks, A., 36:345–65 Ogren, W. L., 35:415–42 Outlaw, W. H. Jr., 31:299–311

#### P

Palni, L. M. S., 34:163-97 Passioura, J. B., 39:245-65 Pate, J. S., 31:313-40 Patterson, B. D., 33:347-72 Payne, P. I., 38:141-53 Pharis, R. P., 36:517-68 Phillips, D. A., 31:29-49 Phillips, R. L., 39:413-37 Pickard, B. G., 36:55-75 Possingham, J. V., 31:113-29 Powles, S. B., 35:15-44 Pradet, A., 34:199-224 Pratt, L. H., 33:557-82 Preiss, J., 33:431-54

#### R

Ragan, M. A., 31:639–78 Ranjeva, R., 38:73–93 Raymond, P., 34:199–224 Reinhold, L., 35:45–83 Rennenberg, H., 35:121–53 Roberts, J. K. M., 35:375–86 Robinson, D., 39:53–99 Rogers, S., 38:467–86 Rolfe, B. G., 39:297–319 Roughan, P. G., 33:97–132 Rubery, P. H., 32:569–96

#### S

Sachs, M. M., 37:363-76 Satoh, K., 37:335-61 Satter, R. L., 32:83-110 Schnepf, E., 37:23-47 Schubert, K. R., 37:539-74 Schulze, E.-D., 37:247-74 Schwintzer, C. R., 37:209-32 Sexton, R., 33:133-62 Sharkey, T. D., 33:317-45 Shimmen, T., 38:95-117 Shropshire, W. Jr., 31:217-38 Silk, W. K., 35:479-518 Silverthorne, J., 36:569-93 Slack, C. R., 33:97-132 Smith, H., 33:481-518 Smith, S. E., 39:221-44 Smith, T. A., 36:117-43 Snell, W. J., 36:287-315 Somerville, C. R., 37:467-507 Spanswick, R. M., 32:267-89 Spiker, S., 36:235-53 Steponkus, P. L., 35:543-84 Stocking, C. R., 35:1-14 Stoddart, J. L., 31:83-111 Stone, B. A., 34:47-70

Strotmann, H., 35:97-120 Sweeney, B. M., 38:1-9 Sze, H., 36:175-208

#### Т

Taiz, L., 35:585-657
Tang, P.-S., 34:1-19
Tazawa, M., 38:95-117
Theg, S. M., 38:347-89
Theologis, A., 37:407-38
Thomas, H., 31:83-111
Thomson, W. W., 31:375-94
Thorne, J. H., 36:317-43
Ting, I. P., 36:595-622
Tjepkema, J. D., 37:209-32
Tobin, E. M., 36:569-93
Tran Thanh Van, K. M., 32:291-311
Trelease, R. N., 35:321-47
Troughton, J. H., 31:191-215

#### V

van Huystee, R. B., 38:205–19 Vänngård, T., 39:379–411 Varner, J., 39:321–53 Vega, J. M., 32:169–204 Velthuys, B. R., 31:545–67 Vennesland, B., 32:1–20 Virgin, H. I., 32:451–63

### W

Walbot, V., 36:367–96 Walton, D. C., 31:453–89 Wareing, P. F., 33:1–26 Wayne, R. O., 36:397–439 Weiler, E. W., 35:85–95 Whatley, J. M., 31:375–94 Whitfeld, P. R., 34:279–310 Wiemken, A., 37:137–64 Woodrow, I. E., 39:533–94

#### V

Yang, S. F., 35:155-89 Yanofsky, M. F., 35:387-413

### Z

Zaitlin, M., 38:291–315 Zeevaart, J. A. D., 39:439–73 Zeiger, E., 34:441–75 Zurawski, G., 38:391–418

# CHAPTER TITLES, VOLUMES 31-39

PREFATORY CHAPTERS		
Some Recollections and Reflections	A. Lang	31:1-28
Recollections and Small Confessions	B. Vennesland	32:1-20
A Plant Physiological Odyssey	P. F. Wareing	33:1-26
Aspirations, Reality, and Circumstances: The		
Devious Trail of a Roaming Plant		
Physiologist	PS. Tang	34:1-19
Reminiscences and Reflections	C. R. Stocking	35:1-14
A Cat Has Nine Lives	M. Evenari	36:1-25
Confessions of a Habitual Skeptic	N. E. Good	37:1-22
Living in the Golden Age of Biology	B. M. Sweeney	38:1-9
Growth and Development of a Botanist	R. O. Erickson	39:1-22
MOLECULES AND METABOLISM		
Bioenergetics		
Efficiency of Symbiotic Nitrogen Fixation in		
Legumes	D. A. Phillips	31:29-49
Role of Light in the Regulation of	2	01.27 17
Chloroplast Enzymes	B. B. Buchanan	31:341-74
Mechanisms of Electron Flow in Photosystem	D. D. Duchaman	51.511
II and Toward Photosystem I	B. R. Velthuys	31:545-67
The Carboxylation and Oxygenation of	2. 1. 101111190	31.515 01
Ribulose 1,5-Bisphosphate: The Primary		
Events in Photosynthesis and		
Photorespiration	G. H. Lorimer	32:349-83
The Physical State of Protochlorophyll(ide) in	G. II. Lorinici	32.347-03
Plants	H. I. Virgin	32:451-63
Blue Light Effects on Respiration	W. Kowallik	33:51-72
Oxygen Activation and Oxygen Toxicity	E. F. Elstner	33:73-96
Photosystem I	R. Malkin	33:455-79
The Cyanide-Resistant, Alternative Path in	K. Makii	33.433-19
Higher Plant Respiration	G. G. Laties	33:519-55
Photosynthetic Reaction Centers	R. J. Cogdell	34:21-45
Adenine Nucleotide Ratios and Adenylate	R. J. Cogaen	34:21-43
Energy Charge in Energy Metabolism	A Dradet D Daymand	34:199-224
Structure, Function, and Regulation of	A. Pradet, P. Raymond	34:199-224
Chloroplast ATPase	H Stratmann C Biokal Candhüttan	35:97-120
	H. Strotmann, S. Bickel-Sandkötter	33:97-120
Photorespiration: Pathways, Regulation, and Modification	W.I. O	25.415.42
	W.L. Ogren	35:415-42
Photosynthetic Electron Transport in Higher	W W 17	25 (50 02
Plants	W. Haehnel	35:659-93
Photosynthetic Oxygen Exchange	M. R. Badger	36:27-53
Pyruvate, P. Dikinase and NADP-Malate		
Dehydrogenase in C <sub>4</sub> Photosynthesis:		
Properties and Mechanism of Light/Dark		
Regulation	G. E. Edwards, H. Nakamoto,	24.000.04
C 1	J. N. Burnell, M. D. Slack	36:255–86
Crassulacean Acid Metabolism	I. P. Ting	36:595-622
Photoregulation of the Composition, Function,		
and Structure of Thylakoid Membranes	J. M. Anderson	37:93-136

Physiology of Actinorhizal Nodules	J. D. Tjepkema, C. R. Schwintzer, D. R. Benson	37:209-32
Membrane-Bound NAD(P)H Dehydrogenases	D. R. Bellson	31.209-32
in Higher Plant Cells	I. M. Møller, W. Lin	37:309-34
The Control by State Transitions of the		
Distribution of Excitation Energy in		
Photosynthesis	D. C. Fork, K. Satoh	37:335-61
Products of Biological Nitrogen Fixation in Higher Plants: Synthesis, Transport, and		
Metabolism	K. R. Schubert	37:539-74
Membrane-Proton Interactions in Chloroplast	K. K. Schubert	31.333-14
Bioenergetics: Localized Proton Domains	R. A. Dilley, S. M. Theg,	
	W. A. Beard	38:347-89
Photochemical Reaction Centers: Structure,		
Organization, and Function	A. N. Glazer, A. Melis	38:11-45
Genetic Analysis of Legume Nodule Initiation	B. G. Rolfe, P. M. Gresshoff	39:297-319
Photosynthetic Electron Transport in Higher Plants	T. Vänngård, L. Andréasson	39:379-411
Enzymatic Regulation of Photosynthetic CO2	1. Vaingaid, E. Andreasson	39.379-411
Fixation in C3 Plants	I. E. Woodrow, J. A. Berry	39:533-94
Small Molecules		
Photocontrol of Carotenoid Biosynthesis A Descriptive Evaluation of Quantitative	R. W. Harding, W. Shropshire, Jr.	31:217-38
Histochemical Methods Based on Pyridine		
Nucleotides	W. H. Outlaw, Jr.	31:299-311
Cyanogenic Compounds	E. E. Conn	31:433-51
Biochemistry and Physiology of Abscisic		
Acid	D. C. Walton	31:453-89
Mechanisms of Action of Herbicides	D. E. Moreland	31:597-638
Modern Methods for Plant Growth Substance	M. L. Brenner	22.511 20
Analysis Structure, Biosynthesis, and Biodegradation of	M. L. Brenner	32:511–38
Cutin and Suberin	P. E. Kolattukudy	32:539-67
Compartmentation of Nonphotosynthetic	Tr Dr Hommondy	02.000
Carbohydrate Metabolism	D. T. Dennis, J. A. Miernyk	33:27-50
Cellular Organization of Glycerolipid		
Metabolism	P. G. Roughan, C. R. Slack	33:97-132
Phospholipid Biosynthesis	T. S. Moore, Jr.	33:235-59
Chemistry and Physiology of the Bound Auxins	J. D. Cohen, R. S. Bandurski	33:403-30
myo-Inositol: Its Biosynthesis and Metabolism	F. A. Loewus, M. W. Loewus	34:137-61
The Biosynthesis and Metabolism of		
Cytokinins	D. S. Letham, L. M. S. Palni	34:163-97
Chlorophyll Biosynthesis: Recent Advances		
and Areas of Current Interest	P. A. Castelfranco, S. I. Beale	34:241-78
Immunoassay of Plant Growth Regulators	E. W. Weiler	35:85-95
The Fate of Excess Sulfur in Higher Plants Ethylene Biosynthesis and its Regulation in	H. Rennenberg	35:121-53
Higher Plants	S. F. Yang, N. E. Hoffman	35:155-89
Polyamines	T. A. Smith	36:117-43
Nitrogen Metabolism in Roots	A. Oaks, B. Hirel	36:345-65
Siderophores in Relation to Plant Growth and		
Disease	J. B. Neilands, S. A. Leong	37:187-208
Sterol Biosynthesis	P. Benveniste	37:275-308
Gibberellin Biosynthesis and Control Plant Growth-Promoting Brassinosteroids	J. E. Graebe N. B. Mandava	38:419-65 39:23-52
Fatty Acid Metabolism	J. L. Harwood	39:101-38
Metabolism and Physiology of Abscisic Acid	J. A. D. Zeevaart, R. A. Creelman	39:439-73
	,	
Macromolecules		
The Molecular Characterization and Organization of Plant Chromosomal DNA		
Sequences	R. Flavell	31:569-96
		21.002 70

## 634 CHAPTER TITLES

Chloroplast Proteins: Synthesis, Transport, and Assembly	R. J. Ellis	32:111–37
The Assimilatory Nitrate-Reducing System		
and Its Regulation	M. G. Guerrero, J. M. Vega,	
	M. Losada	32:169-204
Cell Wall Turnover in Plant Development Phosphoenolpyruvate Carboxylase: An	J. M. Labavitch	32:385-406
Enzymologist's View	M. H. O'Leary	33:297-315
Regulation of the Biosynthesis and		
Degradation of Starch	J. Preiss	33:431-54
Phytochrome: The Protein Moiety	L. H. Pratt	33:557-82
Arabinogalactan-Proteins: Structure,		
Biosynthesis, and Function	G. B. Fincher, B. A. Stone,	
	A. E. Clarke	34:47-70
Synthesis and Regulation of Major Proteins in		
Seeds	T. J. V Higgins	35:191-221
Leghemoglobin and Rhizobium Respiration	C. A. Appleby	35:443-78
Plant Lectins: Molecular and Biological		
Aspects	M. E. Etzler	36:209-34
Plant Chromatin Structure	S. Spiker	36:235-53
Rapid Genomic Change in Higher Plants	V. Walbot, C. A. Cullis	36:367-96
Topographic Aspects of Biosynthesis, Extracellular Secretion, and Intracellular		
Storage of Proteins in Plant Cells Alteration of Gene Expression During	T. Akazawa, I. Hara-Nishimura	36:441-72
Environmental Stress in Plants	M. M. Sachs, TH. D. Ho	37:363-76
Cellulose Biosynthesis	D. P. Delmer	38:259-90
Some Aspects of Calcium-Dependent		
Regulation in Plant Metabolism Some Molecular Aspects of Plant Peroxidase	H. Kauss	38:47-72
Biosynthetic Studies	R. B. van Huystee	38:205-19
ORGANELLES AND CELLS		
Function		
The Chloroplast Envelope: Structure,		
Function, and Role in Leaf Metabolism	U. Heber, H. W. Heldt	32:139-68
Physical and Chemical Basis of Cytoplasmic	C. Heber, H. W. Heldt	32.137-00
Streaming	N. Kamiya	32:205-36
Plant Protoplasts as Physiological Tools	E. Galun	32:237-66
Electrogenic Ion Pumps	R. M. Spanswick	32:267-89
Viroids: Abnormal Products of Plant	R. M. Spanswick	32.201-07
Metabolism	T. O. Diener	32:313-25
Light-Mediated Movement of Chloroplasts	W. Haupt	33:205-33
Influence of Surface Charges on Thylakoid	······································	001200 00
Structure and Function	J. Barber	33:261-95
Mitochondrial Genome Organization and		001201 70
Expression in Higher Plants	C. J. Leaver, M. W. Gray	33:373-402
Plant Molecular Vehicles: Potential Vectors	C. J. Leaver, M. W. Glay	33.313 402
for Introducing Foreign DNA into Plants	S. H. Howell	33:609-50
Photosynthetic Assimilation of Exogenous		
HCO <sub>3</sub> by Aquatic Plants	W. J. Lucas	34:71-104
Aspects of Hydrogen Metabolism in		
Nitrogen-Fixing Legumes and Other	C F:1 W 1 F	24 105 26
Plant-Microbe Associations	G. Eisbrenner, H. J. Evans	34:105-36
Organization and Structure of Chloroplast	D W WELCH W D 1	21.000 210
Genes	P. W. Whitfeld, W. Bottomley	34:279-310
The Biology of Stomatal Guard Cells	E. Zeiger	34:441–75
Membrane Transport of Sugars and Amino Acids	L. Reinhold, A. Kaplan	35:45-83
Plant Transposable Elements and Insertion		551.15 55
Sequences	M. Freeling	35:277-98

Study of Plant Metabolism in vivo Using		
NMR Spectroscopy H+-Translocating ATPases: Advances Using	J. K. M. Roberts	35:375–86
Membrane Vesicles Light Regulation of Gene Expression in	H. Sze	36:175-208
Higher Plants	E. M. Tobin, J. Silverthorne	26.660.02
Dynamics of Vacuolar Compartmentation	T. Boller, A. Wiemken	36:569-93
Fructose 2,6-Bisphosphate as a Regulatory	1. Boller, A. Wiemken	37:137-64
Metabolite in Plants	S. C. Huber	27.222 46
Structural Analysis of Plant Genes	G. Heidecker, J. Messing	37:233-46 37:439-66
Phosphorylation of Proteins in Plants:	G. Heidecker, J. Messing	37:439-00
Regulatory Effects and Potential Involvement in Stimulus Response		
Coupling	R. Ranjeva, A. M. Boudet	38:73-93
Membrane Control in the Characeae	M. Tazawa, T. Shimmen, T. Mimura	38:95-117
Agrobacterium-Mediated Plant Transformation		
and Its Further Applications to Plant		
Biology	H. Klee, R. Horsch, S. Rogers	38:467-86
Regulation of Gene Expression in Higher		
Plants	C. Kuhlemeier, P. J. Green,	
	N. Chua	38:221-57
Cell Wall Proteins	J. Varner, G. I. Cassab	39:321-53
Coated Vesicles	D. Robinson, H. Depta	39:53-99
Plant Mitochondrial Genomes: Organization,		
Expression, and Variation	K. J. Newton	39:503-32
Organization		
Phycobilisomes	E. Gantt	32:327-47
Microtubules	B. E. S. Gunning, A. R. Hardham	33:651-98
Biogenesis of Glyoxysomes	R. N. Trelease	35:321-47
Plant Cell Expansion: Regulation of Cell Wall		
Mechanical Properties	L. Taiz	35:585-657
Organization of the Endomembrane System Cross-Linking of Matrix Polymers in the	N. Harris	37:73–92
Growing Cell Walls of Angiosperms The Plant Cytoskeleton: The Impact of	S. C. Fry	37:165-86
Fluorescence Microscopy	C. W. Lloyd	38:119-39
Immunocytochemical Localization of		
Macromolecules with the Electron		
Microscope	E. M. Herman	39:139-55
Development		
Plastid Replication and Development in the		
Life Cycle of Higher Plants	J. V. Possingham	31:113-29
Development of Nongreen Plastids	W. W. Thomson, J. M. Whatley	31:375-94
Auxin Receptors	P. H. Rubery	32:569-96
Heritable Variation in Plant Cell Culture	F. Meins, Jr.	34:327-46
Calcium and Plant Development	P. K. Hepler, R. O. Wayne	36:397-439
Cellular Polarity	E. Schnepf	37:23-47
Biophysical Control of Plant Cell Growth	D. Cosgrove	37:377-405
Genes Specifying Auxin and Cytokinin Biosynthesis in Phytopathogens	R. O. Morris	37:509-38
Chloroplast Development and Gene		011007 00
Expression	J. E. Mullet	39:475-502
ISSUES, ORGANS, AND WHOLE PLANTS		
Function		
Quantitative Interpretation of Phloem		
Translocation Data	P. E. H. Minchin, J. H. Troughton	31:191-215
The Mineral Nutrition of Higher Plants	D. T. Clarkson, J. B. Hanson	31:239-98
Transport and Partitioning of Nitrogenous	Camazon, v. D. Hanson	J. 257-70
Solutes	J. S. Pate	31:313-40
		21010 10

#### 636 **CHAPTER TITLES**

Infection of Legumes byRhizobia	W. D. Bauer	32:407-4
Phloem Structure and Function	J. Cronshaw	32:465-8
Photosynthesis, Carbon Partitioning, and		
Yield	R. M. Gifford, L. T. Evans	32:485–5
Regulation of Pea Internode Expansion by Ethylene	W Pisisson	24.225
Regulation of Ion Transport	W. Eisinger A. D. M. Glass	34:225-4
		34:311-2
Phloem Loading of Sucrose Phytoalexins and Their Elicitors: A Defense	R. T. Giaquinta	34:347-8
Against Microbial Infection in Plants Factors Affecting Mineral Nutrient	A. G. Darvill, P. Albersheim	35:243-7
Acquisition by Plants	D. T. Clarkson	36:77-11
Ethylene and Responses of Plants to Soil		
Waterlogging and Submergence	M. B. Jackson	36:145-7
Cell-Cell Interactions in Chlamydomonas Phloem Unloading of C and N Assimilates in	W. J. Snell	36:287–3
Developing Seeds	J. H. Thorne	36:317-4
Water Transport	J. S. Boyer	36:473-5
Plant Chemiluminescence	•	
F. B. Abeles		37:49-72
Fruit Ripening	C. J. Brady	38:155-7
Physiological Interactions Between Symbionts		
in Vesicular- Arbuscular Mycorrhizal Plants Metabolism and Compartmentation of	S. E. Smith, V. Gianinazzi-Pearson	39:221-4
Imported Sugars in Sink Organs in Relation to Sink Strength	L. C. Ho	
Water Transport in and to Roots		39:355-
water Transport in and to Roots	J. B. Passioura	39:245-6
velopment		
Organogenesis—A Biophysical View	P. B. Green	31:51-82
Leaf Senescence The Establishment of Tropic Curvatures in	H. Thomas, J. L. Stoddart	31:83-1
Plants	R. D. Firn, J. Digby	31:131-4
Mechanisms of Control of Leaf Movements	R. L. Satter, A. W. Galston	32:83-11
Control of Morphogenesis in In Vitro Cultures	K. M. Tran Thanh Van	32:291-
Cell Biology of Abscission	R. Sexton, J. A. Roberts	33:133-
Genetic Approaches to Circadian Clocks	J. F. Feldman	33:583-
Developmental Mutants in Some Annual Seed	J. P. Petulian	33:363-0
Plants	G. A. Marx	34:389-4
Concept of Apical Cells in Bryophytes and		21.50
Pteridophytes	E. M. Gifford, Jr.	34:419-4
Regulation of Root Development	L. J. Feldman	35:223-4
Osmoregulation and Water Stress in Higher		55.225
Plants	J. M. Morgan	35:299-3
Cell Division Patterns in Multicellular Plants	M.Furuya	35:349-
Quantitative Descriptions of Development	W. K. Silk	35:479
Early Events in Geotropism of Seedling Shoots	B. G. Pickard	36:55-75
Gibberellins and Reproductive Development	B. G. Fickard	30:33-73
in Seed Plants	R. P. Pharis, R. W. King	36:517-6
Rapid Gene Regulation by Auxin	A. Theologis	37:407-3
Plants in Space	T. W. Halstead, F. R. Dutcher	38:317-4
Differentiation of Vascular Tissues	R. Aloni	38:179-2
The Control of Floral Evocation and	K. Aloid	36:179
Morphogenesis	G. Bernier	39:175-2
Photocontrol of Development in Algae	M. J. Dring	39:157-7
	J. E. Dale	37.13/-

Physiological Ecology
Mechanisms of Salt Tolerance in
Nonhalophytes

H. Greenway, R. Munns

31:149-90

J. Berry, O. Björkman	31:491-543
A. D. Hanson, W. D. Hitz	33:163-203
G. D. Farquhar, T. D. Sharkey	33:317-45
D. Graham, B. D. Patterson	33:347-72
H. Smith	33:481-518
S. B. Powles	35:15-44
ED. Schulze	37:247-74
P. Maliga	35:519-42
C. R. Somerville	37:467-507
P. I. Payne	38:141-53
R. L. Heath	31:395-431
	011000 101
A. A. Bell	32:21-81
E.W. Nester, M. P. Gordon,	
R. M. Amasino, M. F. Yanofsky	35:387-413
	35:543-84
M. Zaitlin, R. Hull	38:291-315
D. J. Chapman, M. A. Ragan	31:639-78
G. Zurawski, M. T. Clegg	38:391-418
M. I D. I. Diction.	20.412.22
M. Lee, K. L. Phillips	39:413–37
	A. D. Hanson, W. D. Hitz G. D. Farquhar, T. D. Sharkey D. Graham, B. D. Patterson H. Smith S. B. Powles ED. Schulze P. Maliga C. R. Somerville P. I. Payne R. L. Heath A. A. Bell E. W. Nester, M. P. Gordon, R. M. Amasino, M. F. Yanofsky P. L. Steponkus M. Zaitlin, R. Hull